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Investigations on the Maximum Principle. V S/140/60/000/005/002/021
C111/C222

Here the spherical image was defined with the aid of supporting planes, the differentiability of u(X) was not assumed and does not follow from (A). Now the u(X) are submitted to the stronger condition:
(D) (A) is satisfied by u(X) and every function obtained from it by a two times continuously differentiable transformation the fundamental determinant of which is $\neq 0$, if the new variables are interpreted again as rectangular coordinates.
In the whole paper it is assumed that u(X) satisfies this condition (D).
The paper contains some generalizations of the results of (Ref. 1,2,3) to functions satisfying (D) as well as sufficient conditions that u satisfies (D).
The point 0 is called ordinary with respect to the region G, the operator L and the class $\{u\}$ of functions u(X) if for every $u \in \{u\}$ in an arbitrarily small neighborhood of 0 there exists a set with a positive measure on which $L(u) > 0$. Let Γ be the boundary of the region G. Let u(X) touch the zero in the point 0 quicker than r^{1+q} if in G there exists a sequence $X_m \to 0$ so that $\frac{u(X_m)}{r(X_m \Gamma)^{1+q}} \to 0$. Let $Lu = \sum a_{ik} u_{ik} + \sum b_i u_i + cu$, $a = \sum_{i=2}^{n} a_{ii}$,

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$$b = \sqrt{\sum_{i=2}^{n} b_i^2} \quad , \quad r = \sqrt{\sum_{i=1}^{n} x_i^2} \quad .$$

Theorem 1: Let G and the function u(X) defined in it satisfy the following conditions: (1). G lies in $x_1 > 0$ and its boundary has the "side" V - an (n-1)-dimensional (open) region - on $x_1 = 0$; (2). $u(X) > 0$, and for every $X_0 \in \Gamma - V$ it holds $\lim_{X \to X_0} u(X) > 0$; (3). u(X) approximates the zero solution in $0 \in V$ quicker than x_1^{1+q}, $q \geqslant 0$ (0 is the coordinate origin). In G let an operator L be given, where : There exists an $\varepsilon > 0$ and a non-increasing function h(r) with a finite integral so that almost everywhere in G : (A_1) $\varepsilon a \leq a_{11}$; (B_1) $\phi_1 \equiv \left[\frac{(1-\varepsilon)q}{r} + h(r)\right] a_{11} + b_1 - \varepsilon b \geqslant 0$; (C_1) $\phi_1 + (1+\varepsilon)rc \geqslant 0$. Then in G there exist a set with a positive measure on which $L(u) > 0$.

Theorem 2 : In the neighborhood of 0, let Γ be a smooth surface with first

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derivatives satisfying the Lipschitz condition. Then 0 is ordinary with respect to functions which in 0 approximate the zero solution quicker than $r^{1+q}(q \geqslant 0)$, and with respect to every operator L which, in the neighborhood of 0, satisfies the conditions of theorem 1 (it is assumed that 0 is the coordinate origin, and that the x_1-axis, on the normal of Γ is oriented to the interior of G).

Theorem 3 is a generalization of theorem 2.

Theorem 4: Let the operator L be given in G; let its coefficients be bounded in every $D \subset G$, and $\sum a_{ik} \xi_i \xi_k > a \sum \xi_i^2$, a = const > 0. Let an $u(X) \geqslant 0$ be given in G so that almost everywhere $L(u) \leqslant 0$. If anywhere in G it holds $u = 0$, or if u(X) approximates the zero solution in an ordinary point of the boundary then it holds $u \equiv 0$ in G.

Theorem 5 is the transmission to the present case of the theorem on the extension of the zeros along the curves of ellipticity of (Ref. 1).

Theorem 6: If the function $v(X) \equiv v(x_1, \ldots, x_n)$ has second generalized derivatives summable in n-th power then it satisfies the condition (D).

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Theorem 7 : A function v with generalized second derivatives summable in n-th power has, almost everywhere, the first and second general differential dv, d^2v, where the coefficients of d^2v, almost everywhere, are identical with the generalized second derivatives.
Theorem 8 : Every two times differentiable function satisfies the condition (D).
Theorem 8 is contained in the more general theorem 9 which is formulated without any proof.
There are 7 references: 6 Soviet and 1 American.

[Abstracter's note: (Ref. 1) concerns A.D. Aleksandrov, Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, No. 5 ; (Ref. 2) concerns A.D. Aleksandrov, Izvestiya vysshikh uchebnykh zavedeniy.Matematika, 1959, No. 3 ; (Ref. 3) concerns A.D. Aleksandrov, Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, No. 5 ; (Ref. 4) concerns A.D. Aleksandrov, Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, No. 6]

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)
SUBMITTED: March 4, 1960
Card 5/5

ALEKSANDROV, A.D.; POGORELOV, A.V.

Nikolai Vladimirovich Efimov; on his 50th birthday. Usp. mat. nauk 15 no.6:175-180 N-D '60. (MIRA 14:2)
(Efimov, Nikolai Vladimirovich, 1910-)

ALEKSANDROV, A.D.

Uniqueness theorems for surfaces in the large. Part 7. Vest.
LGU 15 no.7:5-13 '60. (MIRA 13:4)
(Surfaces)

ALEKSANDROV, A.D.

Some evaluations pertaining to the Dirichlet problem. Dokl. AN SSSR 134 no.5:1001-1004 O '60. (MIRA 13:10)

1. Chlen-korrespondent AN SSSR. (Potential, Theory of) (Boundary value problems)

ALEKSANDROV, A.D.

Studying the maximum principle. Part 4. Izv. vys. ucheb. zav.; mat. no. 3:3-15 '60. (MIRA 13:12)

1. Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova.
(Functional analysis)

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S/020/60/134/005/001/023
C111/C333

16.3500

AUTHOR: Aleksandrov, A.D., Corresponding Member of the Academy of Sciences USSR

TITLE: Some Estimations Concerning the Dirichlet Problem

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 5, pp. 1001-1004

TEXT: In the bounded domain G of the variables $x_1,\ldots,x_n$ the author considers the quasilinear equation

(1) $$\sum a_{ik}u_{ik} = \varphi ,$$

where $\| a_{ik} \|$ possesses no negative eigen values. Let X be a point of G. It is assumed that the considered solutions u(X) are continuous and (I) either possess generalized second derivatives summable in the nth power or (II) are twice differentiable. With the aid of a geometric consideration the author obtains conditions that u(X) attains a strict upper or lower bound on the boundary of G (Theorem 1). From this it follows theorem 2: The Dirichlet problem for (1) possesses at most one solution which satisfies (I), if 1.) $a = \mathrm{Det} \| a_{ik} \| > \mathrm{const} > 0$, 2.) the a_{ik} do not depend on u

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S/020/60/134/005/001/023

Some Estimations Concerning the Dirichlet Problem

and φ does not decrease in u, 3.) in every $D \subset G$ for bounded u, u_j it holds:

$$|a_{ik}(u_j+\Delta u_j, x_j)-a_{ik}(u_j, x_j)| \leqslant M\left[\sum \Delta u_j^2\right]^{1/2}$$

$$|\varphi(u_j+\Delta u_j, u, x_j)-\varphi(u_j, u, x_j)| \leqslant N(x_j)\left[\sum \Delta u_j^2\right]^{1/2},$$

where M=const and $N(x_j)$ is summable in the n-th power. Theorem 3 contains a statement on the boundedness of $\inf_G u(X)-\inf_\Gamma u(X)$ and $\sup_G u(X)-\sup_\Gamma u(X)$ for certain u(X). Four further theorems refer to the special case of the linear equation

(4) $L(u) \equiv \sum a_{ik}u_{ik}+\sum b_i u_i+ cu = f$.

The author mentions S.L.Sobolev and Yu.G.Reshetnik.
There are 3 references: 2 Soviet and 1 American.

SUBMITTED: July 18, 1960

Card 2/2

ALEKSANDROV, A.D., prof.

Professor A.M. Negrul'. Izv. TSKhA no.2:213-214 '61. (MIRA 14:8)
(Negrul', Aleksandr Mikhailovich, 1900-)

ALEKSANDROV, A.D.

A condition for the congruence of closed convex surfaces. Vest.LGU 16 no.7:5-7 '61. (MIRA 14:5)

(Surfaces)

ALEKSANDROV, A.D.; VLADIMIROVA, S.M.

Deformation of a polyhedron with fixed faces. Vest. LGU 17 no.13:138-141 '62. (MIRA 15:7)
(Surfaces, Deformation of)

ALEKSANDROV, Aleksandr Danilovich; ZALGALLER, Viktor Abramovich; PETROVSKIY, I.G., akademik, otv.red.; NIKOL'SKIY, S.M., prof., zamestitel'-otv.red.; BARKOVSKIY, I.V., red.izd-va; ZENDEL', M.Ye., tekhn.red.

[Two-dimensional manifolds of bonded curvature; fundamentals of the internal geometry of surfaces] Dvymernye mnogoobraziia ogranichennoi krivizny; osnovy vnutezrmnei geometrii poverkhnostei. Moskva, Izd-vo Akad. nauk SSSR, 1962. 262 p. (Akademiia nauk SSSR. Matematicheskii institut. Trudy, vol. 63). (MIRA 16:2)

(Surfaces) (Curves)

ALEKSANDROV, A.D., otv. red. (Leningrad); MIKHLIN, S.G., glav. red.; TRAVIN, N.V., red.izd-va; KINOGRADOVA, N.F., tekhn. red.

[Papers delivered at the All-Union Mathematical Conference] Trudy chetvertogo Vsesoyuznogo matematicheskogo s"ezda. Leningrad. Vol.1.[Plenary reports] Plenarnye doklady. 1963. 274 p. (MIRA 16:9)

1. Vsesoyuznyy matematicheskiy s"yezd. 4th, Leningrad, 1961. (Mathematics--Congresses)

ALEKSANDROV, A.D.

Conditions of uniqueness and estimations of the solution to the Dirichlet problem. Vest. LGU 18 no.13:5-29 '63. (MIRA 16:9)
(Boundary value problems) (Differential equations)

ALEKSANDROV, A.D., otv. red.; TRAVIN, N.V., red.izd-va; MAMEDOVA, L.M., tekhn. red.

[Transactions of the All-Union Mathematical Conference] Trudy Vsesoiuznogo matematicheskogo s"ezda. Leningrad, Izd-vo "Nauka," Vol.2. [Sectional reports] Sektsionnye doklady. 1964. 704 p. (MIRA 17:2)

1. Vsesoyuznyy matematicheskiy s"yezd. 4th, Moscow, 1961.
2. Prezident Vsesoyuznogo matematicheskogo s"yezda, 4th. Moscow, 1961 (for Aleksandrov).

ALEKSANDROV, A.D.

"System of university education and methods of training university specialists in the USSR."

Report submitted to the Conf. on the Application of Science and Technology for the Benefit of the Less Developed Areas.
Geneva, Switzerland 4-20 February 1963

ALEKSANDROV, A.D.; BURAGO, Yu.D.

Quasi-geodesics. Trudy Mat. inst. 76:49-63 '65. (MIRA 18:6)

ALEKSANDROV, A.D.; STREL'TSOV, V.V.

An isoperimetric problem and estimating the length of a curve on a surface. Trudy Mat. inst. 76:67-80 '65. (MIRA 18:6)

MIKLOS, Anatoliy Georgiyevich; VESHKEL'SKIY, S.A., inzh., retsenzent; LABZIN, M.D., kand. tekhn. nauk, retsenzent; ALEKSANDROV, A.D., nauchn. red.; SMIRNOV, Yu.I., red.

[Automatic control and control and measuring apparatus of marine power plants] Avtomatika i kontrol'no-izmeritel'nye pribory sudovykh silovykh ustanovok. Leningrad, Sudostroenie, 1965. 138 p. (MIRA 18:8)

L 22829-66 EWT(d) IJP(c) JD/JG-2

ACC NR: AP6018522 SOURCE CODE: UR/0043/66/000/001/0005/0025

AUTHOR: Aleksandrov, A. D.

ORG: none

TITLE: Majorants of solutions of linear second-order equations

SOURCE: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 1, 1966, 5-25

TOPIC TAGS: second order equation, mathematic transformation

ABSTRACT: The author considers equations (1.1), $a^{ij}\xi_i\xi_j \geq 0$, with n variables ($n \geq 1$) in a domain G, and their solutions u subject to the conditions (1) u is bounded and continuous in G, (2) u has a continuous supporting transformation, the latter condition being fulfilled: e.g., for u of class I of all continuous functions with generalized second derivatives summable with n-th power in any closed $D \subset G$; and of class II of differentiable functions with (1.2). Let $E = E_m$ be an m-dimensional plane, $1 \leq m \leq n$; X_E the projection of a point x, G_E - the projection of G, Ω_E - the unit sphere in E, $\gamma \in \Omega_E$, $h(x, \gamma)$ -- the distance from $x \in G$ to the supporting plane to G with the normal ν, χ_m -- the area of Ω_E, $\tau_m = m^{-1}\chi_m$. The functions h_{kE}, defined by (2.1) in G and with h_{0E} h_E and h_{mE} h_E, are introduced. If by means of an orthogonal transformation of the variables the plane E is made the $(x^1, \ldots, x^m)$ plane, the author defines a_E by (2.2). Let, for a function in G, there exist such $\psi \in L_m(G_E)$ that almost everywhere in G (2.3) takes place. Then the author defines the norm $\|\varphi\|_E$ by (2.4). If ψ do not exist, $\|\varphi\|_E = \infty$. If $m = n$ and $\det(a^{ij}) = 1$, the norm $\|\varphi\|_E$ reduces to that in $L_n(G)$.

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ACC NR: AP6018522

Theorem 1. Let u be a solution of (1.1) with $u|_\Gamma \geqslant 0$. Then for any m, $1 \leqslant m \leqslant n$, for almost all planes $E = E_m$ of any bundle, the values $u(x) \not< 0$ are subject to inequalities (2.7) with F_m defined by (2.8), φ_m being bounded, $\varphi'_m(0) = 0$, $\varphi_1 \equiv 0$. More precisely, for $m > 1$, $F_m(\xi)$ is the converse of the function (2.9)

Theorem 2. Under the conditions of Theorem 1 (2.15) takes place for almost all planes of any bundle, for which the denominator in (2.15) is > 0. The latter condition is that of the uniqueness for Dirichlet's problem in class I or II. Let b_E be the projection of the vector (b^i) and $r_E(\chi)$, $\chi \in G$, the distance from χ_E to the boundary of the convex hull of G_E in the direction $-b_E(\chi)$. Define $\bar{c}$ by (4.1)

Theorem 6. Under the conditions of Theorem 1 inequalities (4.2) take place in the same sense as in Theorem 1.

Theorem 8. Inequalities (4.6) take place in the same sense as in Theorem 2.

Theorem 10. Under the conditions of Theorem 6 for any $k \geqslant m$, $s \in (0,1)$, inequalities (5.1) take place in the same sense as in Theorems 1, 6.

The proofs are based on the general method given by the author in another paper ("A General Method of Majorizing Solutions of Differential Equations," Sibirskiy Matematicheskiy Zhurnal, No 2, 1966).

(1.1) $a^{ij}u_{ij} \quad b^i u_i \quad cu \quad f$

(1.2) $\limsup_{x' \to x} \frac{|u(x) - u(x') - (x - x')\nabla u(x)|}{|x - x'|^2} < \infty,$

(2.1) $h_{0E}(x)=\exp\frac{1}{\varkappa_m}\int\limits_{\Omega_E}\ln h(x,\nu)\,d\nu,\quad h_{hE}(x)=\left[\frac{1}{\varkappa_m}\int\limits_{\Omega_E}h^{-h}(x,\nu)\,d\nu\right]^{-\frac{1}{h}}$

(2.2) a_E det(aij), i, j m.

(2.3) $a_E^{-\frac{1}{m}}(x)|\varphi(x)|\leqslant\psi(x_E)$.

(2.4) $\|\varphi\|_E=\inf\|\psi\|_{L_m(\Omega)}$.

(2.7) $|u(x)|<m^{-1}\varkappa_m^{\frac{1}{m}}(\|f_+\|_E+\|c_+u\|_E)F_m(\|b\|_E)\,h_E(x)$

(2.8) $F_m(\xi)=e^{\frac{\xi^m}{m^m\varkappa_m}+\varphi_m(\xi)}$

(2.9) $\xi=m\varkappa_m^{\frac{1}{m}}(\ln\eta-\gamma_m(\eta))^{\frac{1}{m}},\quad \eta\geqslant 1$

(2.15) $|u(x)|<\dfrac{\|f_+\|_E h_E(x)}{m\varkappa_m^{\frac{1}{m}}F_m^{-1}(\|b\|_E)-\|c_+h\|_E}$

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$$(4.1)\quad \bar{c} \le \bar{c}_E = c + |b_E| r_E^{-1}.$$

$$(4.2)\quad |u(x)| < m^{-1} \tau_m^{-\frac{1}{m}} (\|f_+\|_E + \|\bar{c}_+ u\|_E \bar{h}_E(x)$$

$$(4.6)\quad |u(x)| < \frac{\|f_+\|_E \bar{h}_E(x)}{m \tau_m^{\frac{1}{m}} - \|\bar{c}_+ \bar{h}\|_E}$$

$$(5.1)\quad |u(x)| < H_{m,s}(\|(f - cu)_+\| + |b| r^{-s} |u|^s\|_E) h_{h_E}(x)$$

Orig. art. has: 5 formulas. [JPRS]

SUB CODE: 12/ SUBM DATE: 15 Jul65/ ORIG REF: 005/ OTH REF: 002

Card 4/4 0/ 5

L 03016-67 EWT(d) IJP(c)
ACC NR: AP6028216 SOURCE CODE: UR/0199/66/007/003/0486/0498

AUTHOR: Aleksandrov, A. D.

23
B

ORG: none

TITLE: A general method for the majorization of solutions of the Dirichlet problem

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 7, no. 3, 1966, 486-498

TOPIC TAGS: partial differential equation, boundary value problem, Dirichlet problem, elliptic equation

ABSTRACT: Functions which majorize solutions of the Dirichlet problem are constructed for second order differential equations of a sufficiently general form (in general, elliptic equations). The majorant is dependent on the region and certain integral characteristics of the equation, on the type of coefficient norms, and in some cases, on analogous characteristics of the solution itself and the boundary conditions. Estimates are obtained for possible values of solutions at any given point in the region of definition. The estimate theorems for a finite region G are generalized to apply as well to projected-finite and infinite regions. Orig. art. has: 30 formulas.

SUB CODE: 12/ SUBM DATE: 30Jun65/ ORIG REF: 006/ OTH REF: 004

UDC: 517.946

L 03023-67 EWT(d) IJP(c)

ACC NR: AP6027726 SOURCE CODE: UR/0020/66/169/004/0751/0754

24
B

AUTHOR: Aleksandrov, A. D. (Academician)

ORG: none

TITLE: The method of projections in the study of solutions of elliptic equations

SOURCE: AN SSSR. Doklady, v. 169, no. 4, 1966, 751-754

TOPIC TAGS: partial differential equation, elliptic equation, approximation method

ABSTRACT: Estimates are derived for solutions of elliptic partial differential equations using the method of projections. The lower projection u_E of a function u is defined as a function in G_E--a projection of G, a bound region of Euclidean n-space--such that

$$u_E(x') = \inf_{x_E = x'} u(x), \quad x' \in G_E, \quad x \in G.$$

is some elliptic expression, then if $v_{ij}\xi_i\xi_j \geqslant 0$, we have

$$F'_t(u_{ij} + tv_{ij}, u_i, u, x)_{t=0} = F_{u_{ij}} v_{ij} \geqslant 0,$$

and for its projection we have

$$F(u_{ij}, u_i, u, x) \geqslant F_E(u_{Eij}, u_{Ei}, u_E x_E).$$

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ACC NR: AP6027726

The upper projection of F is defined in a similar manner. Theorems are stated and proved to show how precise estimates for solutions may be made by this method, projecting on a plane and on lines. Orig. art. has: 17 formulas.

SUB CODE: 12/ SUBM DATE: 18May66/ ORIG REF: 003

Card 2/2

L 10797-67 EWT(d) IJP(c)
ACC NR: AP7003513 SOURCE CODE: UR/0043/66/000/002/0005/0020

16

ALEKSANDROV, A. D.

15

Majorants of Solutions and Uniqueness Conditions for Elliptic Equations"

Leningrad, Vestnik Leningradskogo Universitota, No 7, Seriya Matematika, Mekhanika i Astronomii, No 2, 1966, pp 5-20

Abstract: In an earlier article by the author functions were constructed which majorize solutions to the Dirichlet problem, and uniqueness conditions were obtained for the linear equations

$$a^{ij}u_{ij}+b^{i}u_{i}+cu=f,\quad a^{ij}\xi_i\xi_j\geqslant 0. \qquad (1.1)$$

It is shown in the present article that the majorants found in the earlier article, as well as the inequalities expressing the uniqueness conditions, are exact for convex domains. This means that in domain G equation (1.1) can be given with a solution which at a given point $x\in G$, comes arbitrarily near the majorant. Therefore, there is no need to consider the equations and their solutions subject to the general conditions adopted in the earlier article, and it is sufficient to limit oneself to the following assumptions:

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ACC NR: AP7003513

(1) Domain G, defined in equation (1.1), is assumed to be finite. (2) Equation (1.1) is elliptic ($a^{ij}\xi_i\xi_j > 0$ for $\sum \xi_i^2 > 0$) with coefficients and right-hand side continuous and arbitrarily smooth in G. (3) The solutions u which are considered are continuous in G + Γ and twice continuously differentiable in G and may be considered arbitrarily smooth in G. It is assumed that $u \not\equiv 0$. (4) On the boundary u = 0.

The article also considers the case of an infinite domain.

Orig. art. has: 4 formulas. [JPRS: 38,695]

ORG: none

TOPIC TAGS: Dirichlet problem, linear equation

SUB CODE: 12 / SUBM DATE: 15Jul65 / ORIG REF: 002

Card 2/2

ACC NR: AP7004563 SOURCE CODE: UR/0043/66/000/003/0005/0010

ALEKSANDROV, A. D.

"Impossibility of Any General Evaluations of Solutions and Any Uniqueness Conditions for Linear Equations with Norms Weaker than Those in L_n"

Leningrad, Vestnik Leningradskogo Universitota No. 13, Ser. Mat. Mekh. i Astron. (News of the Leningrad University, No. 13, Series Mathematics, Mechanics and Astronomy), No. 3, 1966, pp 5-10

Abstract: This is a follow-up of two earlier papers (this journal, No. 7, pp 5-20 (1966); No. 13 (1966)), in which evaluations were obtained for solutions and uniqueness conditions of the first boundary value problem for linear equations in an n-dimensional region G. In the simplest case these evaluations and uniqueness conditions involve the norms in L_n (G) with the weight a^{-1}, $a = \det(a^{ij})$. A theorem is given which demonstrates that neither general evaluations of the solution nor any uniqueness conditions with norms weaker than those in $L_n(G)$ are possible, providing that no additional conditions are imposed on the equations. Orig. art. has: 35 formulas. [JPRS: 38,695]

ORG: none

TOPIC TAGS: linear equation, boundary value problem

SUB CODE: 12 / SUBM DATE: 15Jul65 / ORIG REF: 003 / OTH REF: 002

Card 1/1 UDC: 517.944

0926 1399

ALEKSANDROV, A.D.; MEDVEDEV, Ye.K.; BAKHTOVA, K.K.; LEVCHUK, K.V., red. izd-va; TSAGURIYA, G.M., tekhn.red.

[Collection of commercial treaties and commercial and payment agreements as well as long-term agreements of the U.S.S.R. with foreign states as of Janurary 1, 1961] Sbornik torgovykh dogovorov, torgovykh i platezhnykh soglashenii i dolgosrochnykh torgovykh soglashenii SSSR s inostrannymi gosudarstvami na 1 ianvaria 1961 goda. Moskva, Vneshtorgizdat, 1961. 623 p. (MIRA 14:11)

1. Russia (1923- U.S.S.R.) Ministerstvo vneshney torgovli. Dogovorno-pravovoye upravleniye.
(Commercial treaties)

ALEKSANDROV, A. F.

Aleksandrov, A. F. - "On the yellow jaundice epidemic clinic," Sbornik trudov (Voyen.-med. akad. im. Kirova), Vol. XLIII, 1949, p. 25-32

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949.)

ALEKSANDROV, A.F.

1431. SUPRACONDYLAR FRACTURES OF THE HUMERUS IN CHILDREN (Russian text) - Alexandrov A. F. - ORTOP. TRAVM. I PROTEZ. 1958, 19/3 (9-14) Tables 1

A series of 607 cases is analysed. Neurovascular symptoms were present in 23 cases. Pulsations of the radial artery could not be felt in 4 children and in 19 other children there were signs of paralysis. There was no dislocation in 358 cases, great dislocations were observed in 249 cases, 210 being of the extension type and 39 of the flexion type. The author recommends to begin exercises after 7 days of immobilization. Open reduction should be resorted to only in exceptional cases. A follow-up of 229 cases showed good results in 67.5%, satisfactory in 29.5% and poor results in 3%. The results were worst where the rotatory dislocation had not been overcome.

Conforty - Sofia (IX, 7: 19)

ALEKSANDROV, A.F.

Intra-articular fractures of the lower end of the humerus in children. Khirurgiia 34 no.8:80-87 Ag '58 (MIRA 11:9)

1. Iz klinicheskoy bol'nitsy imeni Filatova i kliniki detskoy khirurgii II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova (nauchnyy rukovoditel' - prof. S.D. Ternovskiy).

(HUMERUS, fract.
intra-articular, of lower end in child (Rus))

ALEKSANDROV, A.F., prof. (Leningrad)

Methodology for determining the permeability of skin capillaries.
Sov. med. 27 no.1:82-85 Ja '64. (MIRA 17:12)

L 27695-65 EWT(l)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EWA(m)-2 Pz-6/Pc-4/Pab-10/Pi-4
IJP(c) AT

ACCESSION NR: AP5003233 S/0057/65/035/001/0035/0042

AUTHOR: Aleksandrov, A.F.

TITLE: Impedance of a plane capacitor completely or partly filled with plasma. 1.

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.1, 1965, 35-42

TOPIC TAGS: mathematical physics, plasma, plasma diagnostics, plasma resistance

ABSTRACT: The impedance of a plane capacitor containing a nonuniform plasma is calculated with space dispersion taken into account. The calculations were undertaken because of large discrepancies between the simple theory and the experimental results of numerous authors for the case in which the applied frequency is small compared with the electron Langmuir frequency. The paper is divided into three sections. In the first section the author calculates the impedance of a capacitor filled with a uniform plasma. The ion motions are neglected and the effect of electron collisions is taken into account by means of a linear damping term in the electron equation of motion. In the second section the case of a nonuniform plasma is treated by integrating the impedance for a uniform plasma across the width of the capacitor. The integration is performed for a parabolic electron density distribu-

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L 27595-65

ACCESSION NR: AP5003233

3

tion and the resulting expressions are simplified for the case that the Langmuir frequency greatly exceeds both the applied and the electron collision frequency. In the third section the effect of space dispersion is taken into account. The linearized hydrodynamic equation of motion is employed for the electrons and Poisson's equation is introduced. The resulting expression for the impedance is discussed in some detail for values of the parameters appropriate to experimental conditions. A resonance increase in the resistance is found to occur; this is due to the excitation of plasma waves. The motion of the ions is expected to give rise to a similar increase in the resistance due to the excitation of the low frequency branch of the plasma waves. A future paper is promised in which this effect will be discussed. "The author is grateful to A.A.Kuzovnikov and V.Ye.Mitsuk for discussing the results of the work." Orig.art.has: 42 formulas and 1 figure.

ASSOCIATION: Moskovskiy ordena Lenina gosudarstvennyy universitet im.M.V.Lomonosova (Moscow State University)

SUBMITTED: 09Mar64 ENCL: 00 SUB CODE: EC,NS

NR REF SOV: 007 OTHER: 004

Card 2/2

L 03150-65 EPA(w)-2/EWT(l)/EPC(t)/EPA(sp)-2/T/EWA(m)-2 Pi-4/Po-4/Pz-6/Pab-10

ACCESSION NR: AP5005222 S/0057/65/035/002/0226/0234

AUTHOR: Aleksandrov, A. F.

TITLE: Impedance of a plane capacitor completely or partially filled with plasma.2

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.2, 1965, 226-234

TOPIC TAGS: plasma diagnostics, plasma oscillation, plasma ion oscillation, capacitor, capacitance, inductance, resistance

ABSTRACT: The impedance of an infinite plane capacitor containing between its plates a plasma of singly-charged ions and electrons is discussed theoretically. The calculations are based on the linearized magnetohydrodynamic equations of motion for the electrons and ions with collisions between charged and neutral particles taken into account. The dispersion equation for longitudinal [illegible] is derived, and with the aid of the equations of motion, the impedance of the capacitor is calculated. The resulting expression is simplified by expansion with retention of only the first order terms in the ratio of the ion to the electron temperature, and the impedance and plasma motion are discussed in detail for the three frequency ranges into which

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L 33166-65

ACCESSION NR: AP5005222

4

the ion and electron Langmuir frequencies separate the frequency axis. The calculated dependence of the resistive component of the impedance on plasma density in the medium frequency range is in agreement with earlier experimental results (A.F.Alexandrov and A.A.Kuzovnikov, ZhTF 36, 555 [illegible]

[illegible] excitation of ionic acoustic waves. The author expresses his deep gratitude to A.A.Rukhadze, A.A.Kuzovnikov and V.Ye.Mitsuk for discussing the results of the work." Orig.art.has: 39 numbered formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova, Fizicheskiy fakultet (Physics Department, Moscow State University)

SUBMITTED: 29May64/--Feb65 ENCL: 00 SUB CODE:ME,EM

NR REF SOV: 004 OTHER: 003

Card 2/2

ALEKSANDROV, A.F.

ALEKSANDROV, A.F.

Servicing equipment in one place has raised labor productivity.
Vest. sviazi 17 no.10:40-41 O '57 (MIRA 10:11)

1. Ministr svyazi Latviyskoy SSR.
(Latvia--Telecommunication)

ALEKSANDROV, A.F.

Practices of the leading workers should be observed by all collectives of communication workers. Vest. sviazi 21 no.12:18-19 D '61. (MIRA 14:12)

1. Ministr svyazi Latviyskoy SSR.
(Telecommunication--Employees)

L 33166-65 EPA(w)-2/EWT(1)/EEC(t)/EPA(sp)-2/T/EWA(m)-2 Pi-4/Po-4/Pz-6/Pab-10
IJP(c) AT

ACCESSION NR: AP5005222 S/0057/65/035/002/0226/0234

AUTHOR: Aleksandrov, A.F.

TITLE: Impedance of a plane capacitor completely or partially filled with plasma.2

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.2, 1965, 226-234

TOPIC TAGS: plasma diagnostics, plasma oscillation, plasma ion oscillation, capacitor, capacitance, inductance, resistance

ABSTRACT: The impedance of an infinite plane capacitor containing between its plates a plasma of singly-charged ions and electrons is discussed theoretically. The calculations are based on the linearized magnetohydrodynamic equations of motion for the electrons and ions with collisions between charged and neutral particles taken into account. The dispersion equation for longitudinal oscillations is derived, and with the aid of this and the corresponding plane wave solutions of the equations of motion, the impedance of the capacitor is calculated. The resulting expression is simplified by expansion with retention of only the first order terms in the ratio of the ion to the electron temperature, and the impedance and plasma motion are discussed in detail for the three frequency ranges into which

Card 1/2

L 33166-65

ACCESSION NR: AP5005222

4

the ion and electron Langmuir frequencies separate the frequency axis. The calculated dependence of the resistive component of the impedance on plasma density in the medium frequency range is in agreement with earlier experimental results (A.F.Aleksandrov and A.A.Kuzovnikov, ZhTF 30,555,1963). The reactive component in this frequency range can be either inductive or capacitive, depending on the conditions of the plasma, the separation between the plates, and the frequency. It is shown that in the low frequency range the resistive component of the impedance is due to the excitation of ionic acoustic waves. "The author expresses his deep gratitude to A.A.Rukhadze, A.A.Kuzovnikov and V.Ye.Mitsuk for discussing the results of the work." Orig.art.has: 39 numbered formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova, Fizicheskiy fakul'tet (Physics Department, Moscow State University)

SUBMITTED: 29May64/--Feb65 ENCL: 00 SUB CODE:ME,EM

NR REF SOV: 004 OTHER: 003

Card 2/2

L 9918-63 EWT(l)/BDS/EEC(b)-2/ES(w)-2--AFFTC/ASD/ESD-3/AFWL/
SSD--Pab-4/Pi-4/Po-4--IJP(C)
ACCESSION NR: AP3000009 S/0057/63/033/005/0555/0556

AUTHOR: Aleksandrov, A. F.; Kuzovnikov, A. A.

TITLE: Concerning the high-frequency conductivity of the plasma in the positive column of a gas discharge in neon

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 5, 1963, 555-556

TOPIC TAGS: high-frequency conductivity , plasma, positive column, Ne

ABSTRACT: The dependence of the conductivity in a Ne positive column on electron density was determined at 0.5 mm Hg and 28.5 megacycles. The measurements were undertaken to test the applicability to finite non-uniform plasmas of the theory given by Ginsburg, V. L. (Rasprostraneniye elektromagnitny*kh voln v plasme, Fizmatgiz, 1960). The measurements were extended to electron densities up to 4x10sup9 per cc and the results are shown on a graph. The conductivities were measured by modification of the method of Szekely, A. (Ann.d.Phys. 20,279, 1934), using pulse modulation of the high-frequency signal and an oscilloscope display. The plasma was contained

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L 9918-63
ACCESSION NR: AP3000009

2

in a discharge tube 30 cm long with a 2 sq. cm central cross section. The electron densities and temperatures were measured by a probe at the axis of the tube. The reactive component of the plasma conductivity was neglected in reducing the data. The experimental conductivities agree well with the theoretical for electron densities up to about 1.3x10sup9 per cc; thereafter the experimental points drop below the theoretical line. The deviation from theory is ascribed to the effect of a variable space charge resulting from a concentration gradient in the direction of the applied field. This effect should appear only at electron concentrations exceeding a certain value that depends on the frequency of the applied field and on the electron collision frequency. Further investigation is necessary to test this explanation of the deviations. "The authors are grateful to Prof. N. A. Kaptsov for his attention and interest in the work." Orig. art. has: 1 equation and 1 figure.

ASSOCIATION: Fizicheskiy fakul'tet MGU (Physics Department, MGU)

SUBMITTED: 12Feb62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH NR REF SOV: 002 OTHER: 003

lm/ja
Card 2/2

ALEKSANDROV, A.F.

The administration of collective and state farms should be provided with outstanding means of telecommunication. Vest. sviazi 23 no.2: 2-3 F '63. (MIRA 16:2)

1. Ministr svyazi Latviyskoy SSR.
(Telecommunication)

ALEKSANDROV, A.F.

Impedance of a plane capacitor wholly or partly filled with a plasma. Part 1. Zhur. tekh. fiz. 35 no.1:35-42 Ja '65.
(MIRA 18:3)

1. Moskovskiy ordena Lenina gosudarstvennyy universitet imeni Lomonosova.

ALEKSANDROV, A.F.

Impedance of a plane capacitor filled or partly filled with plasma. Part 2. Zhur. tekh. fiz. 35 no.2:226-234 F '65.
(MIRA 18:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, fizicheskiy fakul'tet.

L 3959-66 EWT(1)/ETC/EWG(m)/EPA(w)-2 IJP(c) AT
ACCESSION NR: AP5016690 UR/0294/65/003/003/0354/0359
533.932.15

AUTHOR: Aleksandrov, A. F.; Yatsenko, I. M. 44,55

TITLE: Q-meter investigation of complex conductivity of neon plasma 44,55,21

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 3, 1965, 354-359

TOPIC TAGS: plasma conductivity, dielectric constant, dielectric capacitor

ABSTRACT: A Q-meter study of the complex dielectric constant of a plasma (serving as a dielectric of a capacitor) is used to determine complex conductivity. The frequency range covered (0.5 to 25 Mc) by the probe corresponds to low frequencies (less than ion plasma frequency) and medium-range frequencies (those between ion and electron plasma frequencies). The investigated plasma is characterized by electron temperature much higher than ion temperature. The measurements were made on neon plasmas produced by 5 to 100 mA current discharges in gases at several pressures. The Q-meter method, employing a parallel capacitor of known value, is described in detail. The measurements indicate that the real part of the impedance is essentially pressure-independent and is determined by discharge current and

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L 3959-66

ACCESSION NR: AP5016690

probe frequency. The capacity is found to depend very strongly also on the geometry of the test capacitor. The results agree well with theoretically predicted values. Orig. art. has: 5 figures, 2 equations.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 22Jul64 ENCL: 00 SUB CODE: ME, EM

NO REF SOV: 008 OTHER: 004

Card 2/2

1. ALEKSANDROV, A. G.; FALALEYEV, G.D.; TSUPKIN, G.N.
2. USSR (600)
4. Sand, Foundry
7. Molding sand for radiator production., Lit.proiz., No. 10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

ALEKSANDROV, A.G.

OSTRYAKOV, Petr Alekseyevich [deceased]; ALEKSANDROV, A.G., otvetstvennyy redaktor; GALOYAN, M.A., redaktor; LEDNEVA, N.V., tekhnicheskiy redaktor

[Thermal calculations for electron tubes with grids] Teplovye raschety elektronnykh lamp s setkami. Moskva, Gos.izd-vo lit-ry po voprosam sviazi i radio, 1957. 107 p. (MLRA 10:7)
(Electron tubes) (Thermionic emission)

ALEKSANDROV, A.G., dots; ARONOVICH, I.S., inzh.; BABIKOV, M.A., doktor tekhn.nauk; BATUSOV, S.V., kand.tekhn.nauk; BEL'KIND, L.D., doktor tekhn.nauk; VENIKOV, V.A., doktor tekhn.nauk; VESELOVSKIY, O.N., kand.tekhn.nauk; GOLOVAN, A.T., doktor tekhn.nauk; GOLUBTSOVA, V.A., doktor tekhn.nauk; GREYNER, L.K., inzh.; GRUDINSKIY, P.G., prof.; GUSEV, S.A., inzh.; DMOKHOVSKAYA, L.F., kand.tekhn.nauk; DROZDOV, N.G., doktor tekhn.nauk; IVANOV, A.P., doktor tekhn.nauk [deceased]; KAGANOV, I.L., doktor tekhn.nauk; KERBER, L.L., inzh.; KOCHENOVA, A.I., kand.tekhn.nauk.; LARIONOV, A.N.; MINOV, D.K., doktor tekhn.nauk; NETUSHIL, A.V., doktor tekhn.nauk; NIKULIN, N.V., kand.tekhn.nauk; NILENDER, R.A., prof.; PANTYUSHIN, V.S., prof.; PASYNKOV, V.V., doktor tekhn.nauk; PETROV, G.N., doktor tekhn.nauk; POLIVANOV, K.M., doktor tekhn.nauk; PRIVEZENTSEV, V.A., doktor tekhn.nauk; RADUNSKIY, L.D., inzh.; RENNE, V.T., doktor tekhn.nauk; SVENCHANSKIY, A.D., doktor tekhn.nauk; SOLOV'YEV, I.I., doktor tekhn.nauk; STUPEL' F.A. kand.tekhn.nauk; TALITSKIY, A.V., prof.; TENNIKOV, F.Ye., kand.tekhn. nauk; FEDOROV, L.I., inzh.; FEDOSEYEV, A.M., doktor tekhn.nauk; KHOLYAVSKIY, G.B., inzh.; CHECHET', Yu.S., doktor tekhn.nauk; SHNEY-BERG, Ya.A., kand.tekhn.nauk; SHUMILOVSKIY, N.N., doktor tekhn.nauk; ANTIK, I.B., red.; MEDVEDEV, L.Ya., tekhn.red.

[The history of power engineering in the U.S.S.R. in three volumes] Istoriia energeticheskoi tekhniki SSSR v trekh tomakh. Moskva, Gos. energ. izd-vo.

(Continued on next card)

ALEKSANDROV, A.G.--(continued) Card 2.

Vol.2. [Electric engineering] Elektrotekhnika. Avtorskii kollektiv toma: Aleksandrov i dr. 1957. 727 p. (MIRA 11:2)

1. Moscow. Moskovskiy energeticheskiy institut. 2. Chlen-korrespondent AN SSSR (for Larionov)
(Electric engineering)

22968

S/128/60/000/011/005/007
A033/A133

11500 also 1496, 1160

AUTHORS: Lomakin, A. V., Mirskiy, F. L., Misochko, N. D., Aleksandrov, A. G.

TITLE: Molding large-size steel castings

PERIODICAL: Liteynoye proizvodstvo, no. 11, 1960, 29 - 31

TEXT: The authors, enumerating the deficiencies of fabricating big molds in flasks or in the ground, report on the casting of a 25-ton bed of a horizontal forging machine with overall dimensions of 3,785 x 2,375 x 1,725 mm, 40 - 400 mm walls, at the Novo-Kramatorskiy zavod (Novo-Kramatorsk Plant). The casting was intended for the Azovskiy zavod kuznechno-pressovogo oborudovaniya (Azov Plant of Forging and Pressing Equipment), and was manufactured in an assembled molding jacket, consisting of four vertical cast iron walls with bracing ribs and a bottom plate. The cores were broken down into 23 standardized sizes. The braking gate system was calculated for the pouring of the mold from one 40-ton capacity ladle through two plugs 60 mm in diameter. Feeders 50 mm in diameter were placed in three rows over the casting height, four in each row. The cross section ratio between risers, gate system and feeders was 1: 1.2 : 1.4. The numerous tests being carried out at the plant to find the optimum molding and coating mixture resulted in a recipe cit-

Card 1/4

Molding large-size steel castings

ed in table 1. The authors then give a detailed description of the making of cope and drag and present in a table a comparison of the consumption of molding and core materials for the same part. This table proves that the extent of molding work during molding in jackets is nearly only half of that for molding in the ground Based on the experience gained with the jacket molding of this machine bed a technology has been developed at the plant for the manufacture of the bed mold of another forging machine 35 tons in weight and other large-size castings. The main advantage of the jacket molding of large-size castings over the ordinary molding in the ground is, above all, the high degree of accuracy of dimensions which made it possible to do away completely in eleven spots with mechanical treatment, while in nine spots of the casting an allowance of 10 - 15 mm for mechanical treatment was left instead of 30 - 40 mm according to the ordinary technology. As a result, the mechanical working costs could be cut down by 27% and the casting weight was reduced by 1,500 kg. Table 3 shows comparative data on the floor area required, duration of the casting cycle and the casting output from 1 m^2. The authors point out that with this molding method the plant saves on each machine bed of 35 tons weight 40.2 thousand rubles, which is 603,000 rubles annually. There are 2 figures and 3 tables.

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22968
S/128/60/000/011/005/007
A033/A133

Molding large-size steel castings

Table 1:

constituents	volumetric content of the mixture in %	
	coating mixture	filling mixture
Millerovo 1K025A sand	80.6	81.3
marshallite	19.4	-
iron ore	1.5	-
saw dust	-	10.0
graphite	-	1.7
water glass	7.0	6.0
caustic soda, 10% solution	0.5	1.0

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22960
S/128/60/000/011/005/007
A033/A133

Molding large-size steel castings

Table 2:

molding method	mixture consumption in m^3	
	molding mixture	core mixture
molding by pattern in the ground	32	12
jacket molding in cores	-	23

Table 3:

molding method	required floor area in m^2	duration of cycle, in hours	casting output, ton/m^2
by pattern in the ground	41.8	336	0.9
jacket molding in cores	19.0	108	8.2

Card 4/4

TYAGUNOV, G.A., prof.; AZAT'YAN, A.D.; ALEKSANDROV, A.G.; ANTIK, I.V.; VASIL'YEV, N.N.; ZHIGAREV, A.A.; KORSHUNOV, S.I.; LEBEDEV, I.V.; NILENDER, R.A.

[Electronic vacuum devices; operating conditions, parameters, and characteristics] Elektrovakuumnye pribory; rezhimy, parametry i kharakteristiki. Moskva, 1960. 20 p. (Sborniki rekomenduemykh terminov AN SSSR, Kom.tekhn.terminologii, no.54) (MIRA 14:4)

1. Akademiya nauk SSSR. Komitet tekhnicheskoy terminologii.
(Electron tubes)

BRAUN, Mikhail Petrovich; VINOKUR , Bertol'd Bentsionovich; CHERNOVOL, Arkadiy Vasil'yevich; CHERNYY, Viktor Gavrilovich; ALEKSANDROV, Anatoliy Grigor'yevich; KOSTYRKO, Oleg Stepanovich; ALEKSANDROVA, Natal'ya Pavlovna; LYASHENKO, Lyudmila Aleksandrovna; MATYUSHENKO, Nelli Ivanovna; FIKSEN, N.V., kand. tekhn. nauk, otv. red.; POKROVSKAYA, Z.S., red.; DAKHNO, Yu.B., tekhn. red.

[Structural and heat-resistant alloys] Konstruktsionnye i zharoprochnye splavy. Kiev, Izd-vo AN USSR, 1963. 149 p. (MIRA 17:3)

1. Akademiya nauk URSR, Kiev. Instytut lyvarnoho vyrobnytstva.

ACCESSION NR: AT4022203 S/0000/63/000/000/0046/0051

AUTHOR: Aleksandrov, A. G.; Braun, M.P.

TITLE: Structure and properties of cast austenitic steel of complex composition

SOURCE: AN UkrRSR. Insty*tut ly*varnogo vy*robny*tstva. Konstruktsionny*ye i zharoprochny*ye splavy* (Structural and heat-resistant alloys). Kiev, Izd-vo AN UkrSSR, 1963, 46-51

TOPIC TAGS: cast steel, austenitic steel, cast austenitic steel, complex cast austenitic steel, steel, nickel-free steel

ABSTRACT: High temperature, nickel-free alloys are widely used in industry, and many investigations have been reported on their composition and properties. Mostly, however, these alloys are either in the ferrite or austenite-ferrite class. In the present investigation, the authors attempt to check the possibility of melting several high temperature, nickel-free alloys in ovens with acid linings in order to obtain high viscosity and plasticity and thus provide a cheap way for the additional introduction of alloys. The high temperature, nickel-free alloys previously used had a low impact viscosity in the cast condition when melted in electric ovens with acid linings. High temperature alloys with a manganese content of 11-13% and a chromium content of 8-10% may be

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ACCESSION NR: AT4022203

melted in ovens with acid linings without impairing their properties. As shown in Figs. 1 and 2 of the Enclosure, the alloy Fe-Cr-Mn-Si-Al ensures high resistance to oxidation up to 1,000C even with a low content of Si or Al. When this heat resistant Fe-Cr-Mn-Si-Al alloy is melted in an electric oven with an acid lining, it has a sufficiently high viscosity in the liquid state so that it may be used for casting containers for annealing wrought iron and oven parts. "All tests and investigations were performed by Engineers D. Kh. Mezuzhakova, I. M. Gol'verk, M. N. Berkun, A. I. Sapelkina and L. M. Kurbenko." Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Insty*tut ly*varnogo vy*robny*tstva AN UkrSSR (Institute of Foundry Technology, AN UkrSSR)

SUBMITTED: 00 DATE ACQ: 19Mar64 ENCL: 02

SUB CODE: ML, MA NO REF SOV: 014 OTHER: 000

2/4

Card

ACCESSION NR: AT4022203 ENCLOSURE: 01

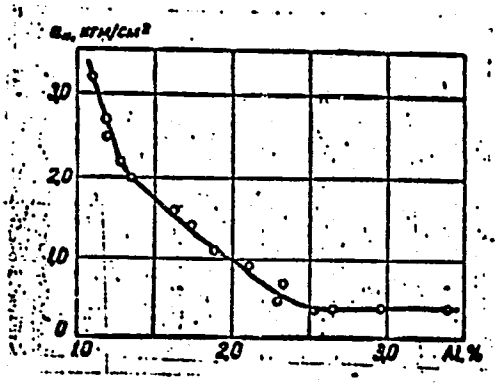

Fig. 1 - Change in impact viscosity of Fe-Cr-Mn-Si-Al alloy in relation to aluminum content (with constant chromium, manganese and silicon content).

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ACCESSION NR: AT4022203

ENCLOSURE: 02

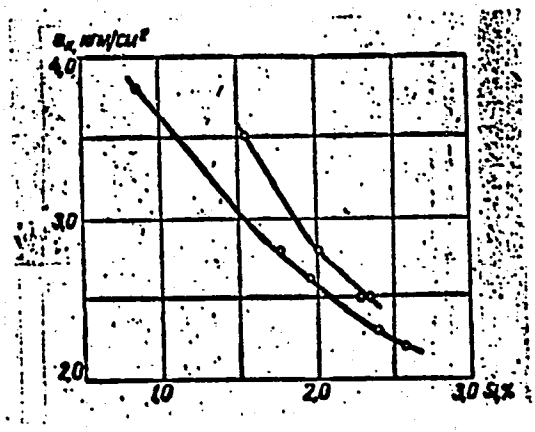

Fig. 2 - Change in impact viscosity of Fe-Cr-Mn-Si-Al alloy in relation to silicon content (with constant chromium, manganese and aluminum content)

Card 4/4

BRAUN, Mikhail Petrovich; VINOKUR, Bertol'd Bentsionovich; CHERNOVOL, Arkadiy Vasil'yevich; CHERNYY, Viktor Gavrilovich; ALEKSANDROV, Anatoliy Grigor'yevich; KOSTYRKO, Oleg Stepanovich; ALEKSANDROVA, Natal'ya Pavlovna; LYASHENKO, Lyudmila Aleksandrovna; MATUSHENKO, Nelli Ivanovna; FIKSEN, N.V., kand. tekhn. nauk, otv. red.; POKROVSKAYA, Z.S., red.

[Structural and heat-resistant alloys] Konstruktsionnye i zharoprochnye splavy. Kiev, Izd-vo AN USSR, 1963. 149 p. (MIRA 17:3)

1. Akademiya nauk URSR, Kiev. Instytut liteynogo proizvodstva.

ALEKSANDROV, A.G., kand. tekhn. nauk; BRAUN, M.P., doktor tekhn. nauk;
Prinimali uchastiye: GOL'VERK, I.M.; BERKUN, M.N.; KURBENKO, L.M.;
GALKIN, Yu.N.

Cast, nickel-free, heat-resistant alloys. Lit. proizv. no.12:
8-10 D '65. (MIRA 18:12)

L 25319-65 EWT(m)/EWP(w)/EPF(n)-2/EWA(d)/EPR/T/EWP(t)/EWP(b) Ps-4/Pu-4 JD/JW/JG

ACCESSION NR: AR5000604 S/0137/64/000/008/I074/I074

SOURCE: Ref. zh. Metallurgiya. Sv. t., Abs. 8I465

AUTHOR: Aleksandrov, A. G.; Braun, M. P.

TITLE: Certain characteristics of the structure and properties of non-nickel cast refractory alloys

CITED SOURCE: Sb. Legirovaniye staley. Kiyev, Gostekhizdat USSR, 1963, 137-142

TOPIC TAGS: nickel economy, metal structure, metal physical property, metal mechanical property, refractory alloy, alloying, cast structure

TRANSLATION: The following systems of alloys have been investigated: iron-chromium (25-30%), iron-chromium (25-30%)-titanium (to 0.8%), iron-chromium (to 30%)-aluminum (1-6%), iron-chromium (12-22%)-manganese (10-14%)-titanium (0.3-1%) makhrot alloys, iron-chromium (20-24%)-manganese (8-13%)-silicon (to 2.1%)-molybdenum (to 0.7%)-titanium (to 0.05%), as well as alloys also containing additions of

Card 1/2

L 25319-65

ACCESSION NR: AR5000604

nitrogen or copper. The melts were made in a VCh furnace in crucibles with an acid lining under a silicate slag. The value of a_k for these alloys in the cast state was, respectively: 0.3-0.5, 0.6-1.0, 0.2-0.4, 0.6-0.7, 0.4-1.0 kgm/cm^2. The optimum chromium content in the alloys was 8-10% by weight (a_k 1.8-6.6 kgm/cm^2). Among the alloys iron-chromium-manganese-titanium-silicon (magnetic), iron-chromium-manganese-aluminum-molybdenum (non-magnetic) and iron-chromium (8-11%)-manganese (10-13%)-silicon (1.6-2.5%)-aluminum (1.8-2.5%) (weakly magnetic), the best combination of properties is possessed by the latter (average increase in weight at 1000° in the course of 100 hours 0.872 g/m^2·hr, a_k 1.6-2.3 kgm/cm^2). For makhrot' they are respectively 0.6518 g/m^2·hr, 0.5-0.8 kgm/cm^2. The alloy with molybdenum at a_k 2.2-5.9 kgm/cm^2 has poor heat resistance, 2.3372 g/m^2·hr. The structure of the alloys is two phase, with large amounts of carbides. 6 literature titles. B. Samarin.

SUB CODE: MM ENCL: 00

Card 2/2

L 36058-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JH

ACC NR: AP6014343 SOURCE CODE: UR/0128/65/000/012/0008/0010

AUTHOR: Aleksandrov, A. G. (Candidate of technical sciences); Braun, M. P. (Doctor of technical sciences)

53
47
B

ORG: none

TITLE: Nickel-free cast high-temperature alloys

SOURCE: Liteynoye proizvodstvo, no 12, 1965, pp 8-10

TOPIC TAGS: austenitic steel, ferritic steel, chromium steel, manganese steel, high temperature strength, impact strength

ABSTRACT: Austenitic Cr-Ni steels and alloys are used as the material for various equipment operating at high temperatures, since they display a good combination of high-temperature strength and toughness. They are, however, expensive owing to their high Ni content, and hence Ni-free alloys of this kind have been developed in the last few years. But the applicability of Ni-free alloys is limited by their low impact strength in cast state. Most of these alloys belong in the ferritic or austenitic-ferritic class and are melted in basic electric furnaces. Considering that many industrial enterprises operate acid furnaces, it was of interest to determine whether these furnaces could be used to melt Ni-free high-temperature alloys

Card 1/2 UDC: 621.74.011:669.018.44

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ACC NR: AP6014343 6

additionally treated with other elements. Accordingly, the authors experimentally investigated the possibility of achieving a high impact strength in specimens of cast ferritic and austenitic-ferritic Cr, Cr-Al, Cr-Mn-Ti and Cr-Mn-Si-Al steels melted in induction and acid furnaces taking as the criterion a minimum impact strength of 1.5 kg-m/cm^2. On this basis it is established that ferritic high-temperature Cr steels, owing to, among other things, the growth of their grain and increase in their brittleness in the course of their operation, are unsuitable for the fabrication of castings and so the attention should be confined to the development of austenitic steels, which display a sufficiently high impact strength in cast state. Accordingly, further experiments were confined to austenitic steels, melted in acid-lined electric furnaces and containing 0.35-50% C and up to 14.5-15% Cr and Mn, which were additionally treated with Si (up to 2.0%) and Al (up to 1.3%), and it was found that their impact strength exceeded the minimum, reaching as high as 5.1 kg-m/cm^2. In austenitic alloys of this kind the effect of the ferrite-forming elements Cr, Si, Al is apparently suppressed by the combined effect of Mn and C. Alloys of this kind may be used in cast state for high-temperature purposes without prior heat treatment (hardening). Orig. art. has: 4 figures, 3 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 005

Card 2/2 vmb

ALEKSANDROV, A.I.

Pervaia vodianaia turbina [First water turbine]. Sverdlovsk, Mashgiz. 1952

SO: Monthly List of Russian Accessions, Vol. 6, No. 2, May 1953

ALEKSANDROV, A.I., kandidat tekhnicheskikh nauk; KOBYAKOV, N.P., master-razmetchik; POSHELOK, I.N., inzhener, retsenzent; BERKGAN, V.Yu., inzhener, redaktor.

[Layout work] Razmetochnoe delo. Sverdlovsk, Gos.nauchno-tekhn.izd-vo mashinostroit.i sudostroit.lit-ry [Uralo-Sibirskoe otd-nie] 1953. 259 p. (MLRA 7:4)
(Machinery--Construction)

ALEKSANDROV, A.

Apparatus of engineer Kobulashvili. Nauka i zhizn' 20 no.12:28 D '53. (MLRA 6:12)

(Kobulashvili, Sh.N.)

(Refrigeration and refrigerating machinery)

ALEKSANDROV, A.I.

BRAZHNIKOV, V.I., kandidat tekhnicheskikh nauk; ALEKSANDROV, A.I., inzhener.

Deterioration of radiant superheater tubing of high-pressure steam boilers. Vest.mash.34 no.1:46-48 Ja '54. (MLRA 7:2)
(Superheaters)

ALEKSANDROV, A. I.

USSR/Miscellaneous---machine construction

Card 1/1

Authors : Brashinkov, V. I., Cand. in Tech. Sciences and Aleksandrov, A. I., engineer

Title : Damage to the tubes of boiler units from the hardening of the metal

Periodical : Vest. mash. 34/3, 32, Mar/1954

Abstract : Temperatures above the critical point, followed by sudden cooling, can harden boiler tubes so as to make them unsafe. Mechanical experiments have shown that the limit of strain for tubes is 97.4 kg/mm^2 with distension of 3.3 percent.. Damage has been found in tubes where there is proximity of petroleum forced burners.

Institution : .....

Submitted : .....

ALEKSANDROV, A. I., kandidat tekhnicheskikh nauk.

History of the machinery industry the in the Urals. Trudy Ural. politekh. inst. no.42:106-115 '55. (MLRA 9:8)
(Ural Mountain region--Machinery industry)

ALEKSANDROV, A.I.

ALEKSANDROV, Aleksandr Ivanovich, kand.tekhn.nauk; DUGINA, N.A., tekhn.red.

[At the sources of hydraulic turbine construction] U istokov gidroturbostroeniia. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 97 p. (MIRA 11:3)
(Hydraulic turbines)

SOV/137-58-7-13986

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 2 (USSR)

AUTHOR: Aleksandrov, A. I.

TITLE: Engineering Draftsmanship at the Metallurgical Plants of the Urals and Siberia, 1700-1950 (Inzhenernaya grafika metallurgicheskikh zavodov Urala i Sibiri 1700-1950 gg.)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 40, pp 107-143

ABSTRACT: Examination is made of questions in the field of engineering draftsmanship at the metallurgical plants of the Urals and Siberia. Factual materials are adduced that provide evidence of the development of engineering draftsmanship as an independent science founded on the accomplishments of Russians active in the graphic arts - V. Shishkov, I. I. Polzunov and others. An investigation of the construction of the 130 metallurgical enterprises in operation in 1790 shows that they were erected on the basis of well-executed plans and drawings.

1. Drafting 2. Industrial plants--Construction

D. P.

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SOV/137-58-7-13985

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 2 (USSR)

AUTHOR: Aleksandrov, A. I.

TITLE: Sources of Power for the Metallurgical Works of the Urals and Siberia in 1700-1840 (Energetika metallurgicheskikh zavodov Urala i Sibiri v period 1700-1840 gg.)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 40, pp 144-170

ABSTRACT: A brief communication on the achievements of outstanding inventors and designers of steam engines and water turbines, including I. I. Polzunov, I. Ye. Safonov. A list of the steam engines installed at the metallurgical plants of the Urals and Siberia in 1765-1840 is provided, and an examination is made of the designs of the steam machines and hydraulic prime movers invented during that period. Bibliography: 18 references.

1. Industrial plants--Power supplies 2. Steam power plants--Development 3. Machines--Development D. P.

Card 1/1

ALEKSANDROV, A.I

VALITOV, R.A.; ALEKSANDROV, A.I.

Thermostats with use of semiconductors. Izm.tekh.no.1:64-65 Ja-F '57. (MLRA 10:4)
(Thermostat) (Semiconductors)

VALITOV, R.A.; ALEKSANDROV, A.I.; AKULOV, I.I.

Semiconductor measuring instruments. Poluprov. prib. i ikh prim. no.2:366-376 '57. (MIRA 11:6)
(Transistors) (Radio measurements)

SOV-115-58-4-36/45

AUTHORS: Valitov, R.A.; Aleksandrov, A.I.; Simonov, Yu.L.

TITLE: Miniature Measuring Instruments Using Transistors (Malogabaritnyye izmeritel'nyye pribory na poluprovodnikakh)

PERIODICAL: Izmeritel'naya tekhnika, 1958, Nr 4, pp 84-88 (USSR)

ABSTRACT: Three pieces of measuring apparatus based on transistors and built by the authors in 1956-1957 are described. (1) A crystal heterodyne wavemeter consisting of a stepless waveband oscillator, crystal auto-oscillator, mixer and AF amplifier for the 125-250 kc and 2-4Mc bands. The set is powered by batteries and consumes 10ma at 30v. Its characteristics are similar to those of the VG-526. (2) A signal generator consisting of carrier-frequency oscillator, power amplifier, crystal calibrator, audio-oscillator, carrier level and modulation factor indicator and voltage dividers. It can operate either on carrier frequency or with amplitude-modulated oscillation, and is used to

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Miniature Measuring Instruments Using Transistors

measure the sensitivity of receivers in a range of 100kc-30Mc (first harmonic) and up to 150Mc (with upper harmonics). An RF voltage of from 10 μv-10mv can be obtained at the output. The apparatus is powered from a side-circuit at 27 $\pm$3 v with a consumption of 1 w and its characteristics are similar to those of the GSS-6. (3) An RC audio-oscillator with stepless wavechange covering a waveband of 20-20,000 c and with an output of 0.15w at a load impedance of 600 ohm. It is powered from batteries and has a consumption of 0.36w. There are 3 circuit diagrams.

1. Measurement---Instrumentation 2. Transistors---Applications

Card 2/2

05372
SOV/106-59-8-4/12

AUTHORS: Aleksandrov, A.I. and Garmash, Ye.N.

TITLE: Analysis of Semiconductor Triode Oscillator Circuits

PERIODICAL: Elektrosvyaz', 1959, Nr 8, pp 31 - 37 (USSR)

ABSTRACT: In the analysis of oscillators, it is usual to obtain an expression for the open-loop gain of the amplifier stage; the condition for self-oscillation is then found from the real part of the expression and the oscillation frequency from the imaginary part. This method is suitable for valve oscillators which have high input impedances but has limitations for semiconductor triode oscillators having low input impedances. The article investigates these limitations and the inaccuracies involved.

The basic oscillator equation is first established by considering the circuit as a four-terminal network, the output terminals of which are connected to the input terminals (Figure 1). Such a circuit is analytically described by the matrix equation:

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Analysis of Semiconductor Triode Oscillator Circuits

$$\left\| \begin{matrix} \dot{U}_1 \\ \dot{I}_1 \end{matrix} \right\| = \left\| \begin{matrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{matrix} \right\| \cdot \left\| \begin{matrix} \dot{U}_2 \\ \dot{I}_2 \end{matrix} \right\| \qquad (1)$$

and, with the feedback loop closed, the basic equation reduces to:

$$A_{11} + A_{22} - |A| - 1 \leqslant 0 \qquad (7)$$

where

$$|A| = A_{11} A_{22} - A_{12} A_{21} .$$

In the simplest form, the oscillator circuit can be considered as two four-terminal networks connected in cascade (Figure 2): the first is active (a semiconductor triode) and the second, representing the feedback

Analysis of Semiconductor Triode Oscillator Circuits

connection, is passive. (The positions of the networks can be reversed without affecting the argument.) The determinant $|A|$ is equal to the product of the determinants of the matrices of the separate four-terminal networks:

$$|A| = |a'| \cdot |a''| \qquad (8)$$

and, considering the determinant of the passive network matrix zero, Expression (7) becomes:

$$A_{11} + A_{22} - |a'| - 1 \leqslant 0 \qquad (9) .$$

This latter expression is used to analyse both common-emitter and common-base or common-collector circuits.

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Analysis of Semiconductor Triode Oscillator Circuits

For common-emitter circuits, the exact basic oscillator equation is:

$$A_{11} + A_{22} - 1 + \frac{Y_{12}}{Y_{21}} \leqslant 0 \qquad (12)$$

which can be simplified to the approximate equation:

$$A_{11} + A_{22} - 1 \leqslant 0 \qquad (14) .$$

It is then shown analytically that the approximate equation for an oscillator does not differ significantly from the exact equation for common-emitter circuits and, consequently, all the design formulae obtained by use of the approximate equation are admissible but, for circuits with a common-base or common-collector, the approximate

Analysis of Semiconductor Triode Oscillator Circuits

equation differs considerably from the exact, and cannot be used for analysis and design of such circuits. There are 9 figures and 6 references, of which 5 are Soviet and 1 German.

SUBMITTED: October 2, 1958

26212
S/106/60/000/010/007/009/XX
A055/A133

9,2560

AUTHOR: Aleksandrov, A. I.

TITLE: Transistorized self-oscillators with common emitter

PERIODICAL: Elektrosvyaz', no. 10, 1960, 27 - 34

TEXT: The basic equation of a transistorized self-oscillator (common-emitter arrangement) is:

$$a_{11}^{T} a_{11} + a_{12}^{T} a_{21} + a_{21}^{T} a_{12} + a_{22}^{T} a_{22} + \frac{Y_{12}}{Y_{21}} \leqslant 1, \qquad (1)$$

where a_{11}^{T} ... a_{22}^{T} are the elements of the transistor a-matrix, a_{11} ... a_{22} are the elements of the a-matrix of the resultant fourpole of the feedback circuit, and $\frac{Y_{12}}{Y_{21}}$ is the determinant of the transistor a-matrix. The analysis contained in the present article is based upon this equation. The generated frequency and the self-excitation condition are calculated in the three following cases: transformer, autotransformer and capacitance coupling. The Y-parameters are used. No limiting condition is set on the parameters as regards frequency. 1) Transformer circuit.-

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Transistorized self-oscillators with common emitter

The investigated circuit is shown with fourpoles in the feedback circuit. The partial coupling of the triode is taken into account by the introduction of coefficient p_1, and the transformer coupling by the introduction of coefficient p_2. Besides:

$$\left.\begin{aligned} R_1 &= \frac{1}{G_1} = \frac{R_{e1}}{1+\frac{R_{e1}}{r'_{22}}p_1^2+\frac{R_{e1}}{R_k}p_2^2} \qquad C_1 = C'_1 + C_{22}p_1^2 + C_k p_2^2 \\ & \qquad C_2 = C_{ex\,inp} \\ R_2 &= \frac{1}{G_2} = \frac{R_{e2}}{1+\frac{R_{e2}}{R'_2}+\frac{R_{e2}}{R_{ex}}_{inp}} \qquad p_1 = \frac{U_{be}}{U_k} \\ & \qquad p_2 = \frac{U_k}{U_k} \end{aligned}\right\} \quad (3)$$

$R_{e1} = \omega_0 L_1 Q_1$ and $R_{e2} = \sqrt{\frac{L_1}{C_2}}\,Q_2$ are equivalent resistances of the circuits; r'_{22} is the reduced internal resistance of the triode, depending on the cutoff-angle of the collector current. Account taken of (3), the author establishes the matrices of

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Transistorized self-oscillators with common emitter

the common-emitter transistor and of the feedback-circuit fourpoles, substitutes these matrices in the basic equation (1) and, after solving the thus obtained equation, he finally finds the following expression for the generated frequency:

$$\omega_{I,II} \approx \sqrt{\frac{B \pm \sqrt{B^2 - 4AD}}{2A}} \qquad (12)$$

where

$$A = (L_1L_2C_1C_2 - M^2C_1C_2)r_{21} + L_1L_2L_{21}(G_1G_2 + G_2C_1) - L_2M^2(G_1C_2 + G_2C_1);$$

$$B = [L_1C_1 + L_2C_2 + G_1G_2(L_1L_2 - M^2) - C_{12}M]r_{21} + L_{21}\left(G_1L_1 + G_2L_2 - M\frac{1}{r_{12}}\right) + \frac{1}{r_{12}}(L_1L_2 - M^2);$$

$$D = r_{21}.$$

For the minimum mutual inductance at which self-excitation is possible, the following expression is found:

$$M_{min} \geqslant \frac{1}{2a} - \sqrt{\left(\frac{1}{2a}\right)^2 - \frac{d}{a}} \qquad (14)$$

where

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Transistorized self-oscillators, with common emitter

$$a = \omega^2 [r_{21}(G_1C_2 + G_2C_1) + L_{21}(G_1G_2 - \omega^2 C_1C_2) + C_{12}];$$

$$b = 1 + \frac{r_{21}}{r_{12}} - \omega^2 L_{21}C_{12};$$

$$d = G_1L_1r_{21}(1 - \omega^2 L_2C_2) + (G_2L_2r_{21} + L_{21} - \omega^2 L_2L_{21}C_2) \times$$
$$\times (1 - \omega^2 L_1C_1) - \omega^2 L_1L_2L_{21}G_1G_2 - \omega^2 L_1L_2C_{12}.$$

2) Autotransformer circuit.- In this case, $C_1 = C_{22}p_1^2$ and $C_3 = C_1'$ [R_1, R_2 and C_2 being determined as in (3)]. By an analogous reasoning and using analogous matrices, the author arrives at the following expression for the self-excitation condition:

$$n(1-n) \geq r_{21}\left[\frac{(1-n)^2}{R_1} + \frac{n^2}{R^2}\right] - n(1-n)\left[\frac{r_{21}}{C_3}(G_1C_2+G_2C_1) + \right.$$
$$\left. + \frac{L_{21}}{C_3}(G_1G_2-\omega^2C_1C_2)\right] - \omega^2 L_{21}[(1-n)^2C_1 + n^2C_2]. \qquad (18)$$

3) Capacitance circuit.- A block diagram is shown as well as the same system with fourpoles in the feedback circuit. Resistance R_1 can be deduced from (3).

$R_2 = \frac{R_{inp}R_2'}{R_{inp}+R_2'}$. Introducing expressions:

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Transistorized self-osqillators with common emitter

$$n = \frac{C_1'}{C_1' + C_2''} = \frac{C_1}{C_1 + C_2}; \quad 1 - n = \frac{C_2''}{C_1'' + C_2''} = \frac{C_2}{C_1 + C_2}, \tag{21}$$

the author finally finds for the generated frequency:

$$\omega = \sqrt{\frac{R_1R_2r_{21}(C_1 + C_2) + r_{21}L + L_{21}(R_1 + R_2)}{L[L_{21}(R_1C_1 + R_2C_2) + r_{21}R_1R_2C_1C_2]}}; \tag{23}$$

and for the self-excitation condition:

$$n(1-n) \geq r_{21}\left[\frac{(1-n)^2}{R_1} + \frac{n^2}{R_2}\right] + \frac{\omega^2 LL_{21}}{R_1R_2}n(1-n). \tag{24}$$

Solving (24) for n gives the limits within which self-excitation is possible:

$$\frac{b}{2a} - \sqrt{\left(\frac{b}{2a}\right)^2 - \frac{d}{a}} \leq n \leq \frac{b}{2a} + \sqrt{\left(\frac{b}{2a}\right)^2 - \frac{d}{a}}, \tag{25}$$

where

$$a = 1 + r_{21}(G_1 + G_2) - \frac{\omega^2 LL_{21}}{R_1R_2};$$

$$b = 1 + 2r_{21}G_1 - \frac{\omega^2 LL_{21}}{R_1R_2};$$

$$d = r_{21}G_1.$$

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Transistorized self-oscillators with common emitter

For approximate calculations, it is possible to state that b $\approx$1. Two numerical examples of calculations using the above formulae (transformer and capacitance circuits respectively) are given. Experimental data coincide satisfactorily with the calculated results. There are 4 figures and 4 Soviet-bloc references.

SUBMITTED: February 26, 1960

Card 6/6

ALEKSANDROV, A.I.

Bridge-type quartz oscillators equipped with transistors. Izm. tekh. no.12:34-36 D '60. (MIRA 13:11)
(Oscillators, Crystal) (Transistors)

33702
S/106/62/000/002/010/010
A055/A101

9,2583 (1040,1147)

AUTHOR: Aleksandrov, A. I.

TITLE: On the calculation of the thermal compensation of the quartz self-oscillator frequency

PERIODICAL: Elektrosvyaz', no. 2, 1962, 67 - 69

TEXT: The author first calculates the thermal compensation in the case of the transistorized oscillating circuit of Fig. 1a, where X is the reactive thermo-compensating element. Fig. 1b shows the circuit with a four-pole in the feed-back. For this circuit:

$$\left.\begin{aligned} R_I \approx R_{eq}, \quad R_{II} \approx R_{inp}, \\ C_I = C_1 + C_{22}, \quad C_{II} = C_2 + C_{inp} \end{aligned}\right\} \qquad (1)$$

C_{inp} and R_{inp} being, respectively, the input capacitance and the input resistance of the transistor, and R_{eq} being the equivalent resistance of the oscillating system. In the following calculations, r_{11}, C_{11}, r_{12}, C_{12}, r_{21}, L_{21}, r_{22} and

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On the calculation of the...

C_{22} represent the transistor parameters; $Q_1 = \omega C_I R_I$ and $Q_2 = \omega C_{II} R_{II}$ are the Q-factors. Taking (1) into account, the author establishes the matrix of the transistor in common-emitter arrangement, the determinant of this matrix and the matrix of the four-pole in the feedback circuit. Substituting these matrices and this determinant in the fundamental equation of the self-oscillator, the author finds, after some transformations and simplifications, the following expression for the thermal compensation condition:

$$X = \frac{r_{21}(Q_1R_{II}+Q_2R_I)+\omega L_{21}(R_I+R_{II}) - \frac{\alpha}{1-\alpha}\left[r_{21}Q_1Q_2+\omega L_{21}(Q_1+Q_2)\right]\frac{1}{\omega C_o}}{r_{21}(Q_1Q_2-1)+\omega L_{21}(Q_1+Q_2)r_{21}(Q_1Q_2-1)+\omega L_{21}(Q_1+Q_2)r_{21}(Q_1Q_2-1)+\omega L_{21}(Q_1+Q_2)} \quad (7)$$

where $\alpha = \frac{2\Delta\omega}{\omega_q}\frac{C_o}{C_q}$, C_o, C_q, L_q and R_q being the parameters of the quartz. The author reproduces next (without deducing it) the thermal compensation condition [analogous to (7)] in the case of a tube oscillating circuit where the quartz and the thermocompensating element are inserted between the grid and the anode. He then derives (using the a-matrices of the tube and of the feedback circuit) the expression for the thermal compensation condition in the case of a tube oscillat-

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A055/A101

On the calculation of the...

ing circuit where the quartz and the thermocompensating element are inserted between the grid and the cathode. Two numerical examples of calculation according to the derived formulae are given at the end of the article: 1) for a tube oscillating circuit with the quartz between the grid and the anode, 2) for a transistorized oscillating circuit with the quartz between the base and the collector. There are 3 figures and 3 Soviet-bloc references. The Soviet authors or scientists mentioned in the article are: E. N. Garmash and E. V. Zelyakh.

SUBMITTED: April 18, 1961

Figure 1.
Legend: 1 - quartz

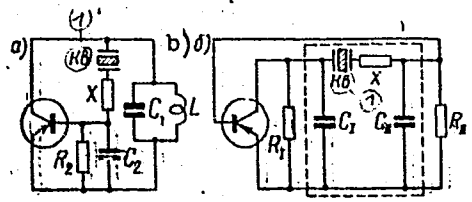

Рис. 1

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ALEKSANDROV, A.I.; BOBLOVSKIY, Yu.B.

Quartz calibrators of meter waves on semiconductor devices.
Izm. tekh. no.9:39-40 S '63. (MIRA 17:1)